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ABSTRACT

This paper offers a small group discussion model as a viable alternative for facilitating critical thinking. The paper first review literature discussing what critical thinking is and whether it can be taught. After defining critical thinking as an active process which involves constructing arguments, the paper concludes that an optimally effective teaching method for critical thinking allows (1) for differences in learning styles and abilities; (2) for observations of, interaction with, and internalization of the process; and (3) for human interaction to aid in the crystallization of learning. The paper next discusses what teaching methods might work and the role of communication research, arguing that small group discussion may be among the best method for teaching critical thinking skills. The paper then presents a model which proposes an interaction between group critical thinking processes as the learning environment and individual learning of those critical thinking processes, in which communication is both a mediating and a moderating variable. Finally, the paper then presents avenues for research into the group variables which might affect such interaction and, specifically, the group critical thinking processes. Thirty-two references are attached. (PRA)

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Group discussion and individual critical thinking processes: An interactive perspective

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Abstract

A thorough review of the educational literature yielded a working definition of critical thinking and a viable alternative for facilitating it: small group discussion. The author presents a model which proposes an interaction between group critical thinking processes as the learning environment and individual learning of those critical thinking processes.

She then presents avenues for research into the group variables which might affect such interaction and, specifically, the group critical thinking process.

Group discussion and individual critical thinking processes: An interactive perspective

A few years ago the National Commission on Excellence in Education published a report, A Nation at Risk (reprint by American Association of School Administrators, 1983). In this report, the Commission expressed concern about many areas of the American educational system. Among these concerns was the discovery that "many 17-year-olds do not possess the 'higher order' intellectual skills we should expect of them" (p. 4). More recently, California has mandated the teaching of critical thinking skills. This concern regarding critical thinking has led many educators and educational psychologists to discuss, theorize and propose ideas on what critical thinking is and how it can be taught. Since group discussion has been presented as an effective method for such teaching, it seems that communication researchers could offer some unique insights into this area. However, before considering the possible roles of communication and communication researchers in this process, we need to briefly review what some of the education researchers have found.

REVIEW OF THE LITERATURE

Critical thinking: what is it?

One of the problems plaguing research in this area is the lack of a clear definition of "critical thinking." Facione (1984) states that "critical thinking is an active

process involving constructing arguments, not just evaluating them" (p. 260). He defines a set of preliminary skills which would enable students to build such arguments:

"1) identifying issues requiring the application of thinking skills informed by background knowledge;

2) determining the nature of the background knowledge that is relevant to deciding issues involved and gathering that knowledge;

3) generating initially plausible hypotheses regarding the issues;

4) developing procedures to test these hypotheses, which procedures lead to the confirmation or disconfirmation of those hypotheses;

5) articulating in argument form the results of these testing procedures; and,

6) evaluating arguments and, where appropriate, revising the initial hypotheses in the light of alternative understandings developed during the testing process" (p. 261).

According to this definition, critical thinking is a problem solving process analogous to Dewey's model of reflective thinking. However, not all educators agree with this macroscopic definition. Some would take a more microscopic approach.

Beyer (1985) states that critical thinking is not a process, "at least not in the sense that problem solving or

decision making are processes; critical thinking is not a unified operation consisting of a number of operations through which one proceeds in sequence" (p. 303). He sees critical thinking as a set of discrete skills and others concur (Fritz & Weaver, 1986; Rudin, 1984). However, Richard Paul (1984) makes a case for conceiving of critical thinking in the "strong sense" (macroscopic): "Conceived of in a *weak sense* critical thinking skills are understood as a set of discrete micro-logical skills ultimately extrinsic to the character of the person; skills that can be tacked onto other learning. In the *strong sense*, critical thinking skills are understood as a set of integrated macro-logical skills ultimately intrinsic to the character of the person and to insight into one's own cognitive and affective processes" (p. 5). Many educators concur with this definition (Facione, 1984; Gorman, 1974; Skinner, 1971; Sternberg, 1985a & b). Even Beyer admits that "no one engages in critical thinking by employing a single critical thinking skill by itself" (p. 302).

Ultimately, students must go beyond knowing how to use these discrete skills to being able to choose which skills to use and in what order. Therefore, in using Facione's (1984) process definition, we gain a better view of the applied critical thinking skills of the student.

Can we teach it?

Teaching a skill is usually accomplished through example and explanation. Although some explanation is possible, it is difficult to "show" critical thinking. Since it is a cognitive, rather than a behavioral skill, we cannot directly observe the process. (Although I will talk more about indirect observation.) This makes it difficult to teach such a skill directly. It is far more likely that we can facilitate it.

Facilitation is accomplished through providing students with opportunities to discover and/or practice the skill themselves and by providing them with necessary feedback concerning their progress. It teaches in an inductive rather than deductive manner. In this way, it may be possible to facilitate critical thinking through providing students' with opportunities to use these skills, to observe manifestations of others using these skills and to receive necessary corrective feedback.

The next step, then, is to determine what kinds of factors must be considered in determining how to facilitate critical thinking. To do this, we turn to the field of educational psychology and some theories about how people learn.

What do we need to consider to facilitate it?

One of the first considerations in teaching or facilitating anything is that *students vary in the ways that*

they learn. This variation may be expressed in such gross measurements as high intellectual ability students who learn better with little structure compared to low ability students who need quite a bit of structure and practice to learn (Friedrich, 1981, p. 146).

Other theorists talk more specifically about how students' learning styles may vary. Three dimensions of these learning styles are: 1) synthesis-analysis or how deeply they process information, 2) elaborative processes or the ability to place content into a personal reference, and 3) fact retention or their ability to pay attention to and remember content (Friedrich, 1981, p. 147).

A third approach is that of the cognitive theorists. They postulate that students' cognitive style may differ depending on the extent the students think in concrete or abstract ways (complexity), rely on external cues to interpret stimuli (field dependence-independence), are dogmatic (rigidity), or see themselves as controlling their own lives (locus of control) (Friedrich, 1981, 148-150).

Whatever the specifics, the results are that students vary in their ability and in the processes they employ to learn. The question of import, then, is what can teachers do to best aid these various learning abilities and processes?

As usual, there is little agreement on the most appropriate philosophies, approaches or methods to take.

However, in the midst of all the controversy there is, again, one recurring theme: *students need to interact with the material or skill they are trying to learn.* Somehow the students have to internalize what they are trying to learn by using it, analyzing it, or manipulating it in some fashion even though they may do this in different ways. In short, they have to do something with it themselves beyond understanding and remembering the content.

The three main schools of thought in education all subscribe to this notion. Humanists believe that "learning is facilitated when the student participates responsibly in the learning process" (Dembo, 1977, p. 311). Likewise the most influential behaviorist is quoted by Gorman (1974) as saying, "To acquire behavior, the student must engage in behavior. (Skinner, 1971)" (p. 80). And the great cognitive theorist, Piaget, built his theory of learning on assimilation/accomodation: "the process of interaction between intelligence and reality." (Gorman, 1974, p. 83).

The only dissenter is Bandura in his studies on observational or social learning. He believes that people can learn merely by observing and that reinforcement encourages people to act out their learning (Shaffer, 1988). Several studies have supported this notion (Babad, 1972; Bandura, 1965; Hieser & Rosenbaum, 1980; Potts, Huston & Wright, 1986). However, while it is important to remember that such observational learning occurs on a regular basis,

we must also realize that these studies are concerned with learning of *behavior* rather than thought processes. I know of no such studies which deal with learning thought processes by allowing students only to observe behavioral manifestations of those thought processes.

It would seem then that there are two principles that educational theorists would generally agree on: 1) students learn in different ways and 2) students need to internalize the material by interacting with it. The possibility of students learning by observation is one which most would accede to, but which, as noted earlier, has not been studied for this type of learning. I would add to this a third principle proposed by Simpson and Gallo (1986). They propose that "Interaction [with others] is more than an enhancing agent; it is *central* to the learning process" (p. 37). I would posit that it is through such interaction, verbalizing, testing and thereby crystallizing our ideas and questions that we learn, especially when that learning involves higher order thinking skills (Friedrich, 1981, p. 157).

Therefore, to be optimally effective, we need a teaching method which allows for differences in learning styles and abilities; allows for observations of, interaction with and internalization of the process; and allows for human interaction to aid in the crystallization of our learning.

What methods might work?

Although other teaching methods are viable, one popular teaching method seems to best meet the criteria we have established: the use of problem solving small groups.

Indeed, two researchers, Johnson and Johnson have empirically validated this approach for the facilitation of critical thinking skills. Their review of the research on cooperative group learning (1985) indicates that cooperative, as opposed to competitive or individualistic learning experiences, tends to "promote more learning" (p. 23) and although "this finding remained constant over a range of age groups, subject areas, and learning activities, the gap in achievement favoring cooperation widens when the learning tasks are more difficult (i.e. problem solving, divergent thinking, decision making etc.)" (p. 23).

These two researchers have also empirically validated another group method for the teaching of critical thinking. This method is based on their controversy model (1988). With this model, students argue the merits of two solutions to a problem, two students to each side. The teacher gives them the problem, the solutions they will argue, the key propositions for each side and the sources of other information. Each side presents their solution to the opposing side, then they switch sides and argue for the opposing side. After this exercise in perspective taking,

the two sides get together to produce a "best" solution to the problem. Johnson and Johnson (1988) claim that this method produces higher quality decisions and teaches critical thinking skills. As a whole, their work on cooperative groups and controversy in groups seems to strongly support group discussion as a viable method for teaching critical thinking.

Certainly, in terms of the criteria defined earlier, group discussion seems to be an excellent choice. It allows for, indeed, requires human interaction. This interaction forces students to do something with (internalize) the skills they are being taught as well as the opportunity to observe manifestations of others' critical thinking processes. The availability of peers with different weaknesses and strengths, allows for a variety of observations to be made concerning others' critical thinking processes and what seems to work or not. The "opportunity for group members to catch and remedy errors of individual judgement" (Hirokawa, 1990) is a commonly cited benefit of group interaction. In fact, although research shows that all students have higher achievement levels when cooperative group learning is used (as opposed to individualistic or competitive approaches), "the lower one-third of the students [by ability level] seem to be the big gainers" (Johnson & Johnson, 1985, p. 23). Group discussions which promote the sharing of differing perspectives and involve

students with different strengths and weaknesses also allow for various learning styles to be utilized since the students are encouraged to look at things from their own perspective as well as to listen to and view issues from the perspectives of their peers.

This, then, would seem to be an answer for the teaching of critical thinking skills. Some educators would go so far as to say it is the best method for teaching such skills. A very convincing argument is made by Sternberg (1985a). He argues that we need to teach critical thinking skills that correspond more closely to what is required for critical thinking in adulthood. One of the realities he mentions is that "everyday problem solving often occurs in groups" (p. 198). These groups range from task forces and committees to families. Therefore, it is important that students learn not only critical thinking skills but how to use these skills in group situations.

The use of group discussion offers other benefits as well. Some of these include: improving discussion skills; raising motivation (DuBois, 1979); helping students sharpen and test the validity of their ideas; developing group skills such as encouraging others, careful listening, setting clear goals; and offering the "psychological benefits of gaining feelings of acceptance and belonging" (Stanford, 1974, p. 88).

All we need to do to teach critical thinking, then, is to put students into small groups and give them a problem to solve. However, this answer raises a few questions. What kind of problem? How many do we put in the group? What kind of structure, if any, do we impose on the problem solving procedure? Do we need to do anything in advance? Here is where the educational literature becomes inadequate. Johnson and Johnson seem to be the only researchers working in this area and they have concentrated on the use of controversy and cooperative groups to socialize students -- minorities, handicapped, shy. The use of groups to teach critical thinking skills has been a secondary concern. Indeed, Gayle Hill (1982) in a comprehensive review of experimental comparisons between the effectiveness of individuals versus groups stated that: "Although a few articles comparing groups and individuals in the classroom may have been omitted, little research has been done in this area . . ." (p. 519). So, it would seem that research on what variables might facilitate individual learning of critical thinking through the small group approach is scarce, certainly there is no evidence of a systematic research program in this area. This, then, is where research needs to begin.

The role of communication research

Communication scholars, with their knowledge of group interaction and process, can offer a different perspective

to this area. We can look at ways to improve the learning experience by improving the group critical thinking process. This "group critical thinking process" can be thought of as how well the group discussion meets the criteria of critical thinking set forth in Facione's (1984) definition. Since Facione's criteria closely parallels the criteria in Hirokawa's functional perspective (1988, 1985) which has already been found to correlate significantly with higher quality decisions by groups, the functional perspective provides an excellent way to operationalize the group critical thinking process. We have evidence that critical thinking can be taught using group discussion, this approach assumes a relationship between the group process and individual learning. Intuitively, we would expect such a correlation simply from the standpoint of learning principles. If the individual is exposed to and engages in a higher quality process, then we would expect him/her to be more likely to learn. At this point, there is no systematic research which supports this notion. There is preliminary evidence from an exploratory study by Dixson (1990). In this study, students were put into problem solving groups utilizing either a controversy agenda, Dewey's problem-solving agenda or no agenda. There was some evidence (though not significant with nine groups) that groups using Dewey's agenda made higher quality decisions and evidenced better processes as measured by the criteria set forth in

Hirokawa's functional perspective (1988). More importantly, the members in the groups with higher quality processes as well as better decisions averaged more gains on the individual critical thinking measurement.

If we agree that small group discussions offer a viable alternative for teaching critical thinking and that the process which occurs during the discussion is likely to affect the learning of critical thinking skills, then we need to consider some ideas as to how the process might affect individual learning. Only then can we choose group variables for research in some systematic fashion and based upon some, albeit preliminary, theoretical notions. With this goal in mind I propose the following commonsensical model in hopes, not of ultimately defining the interaction, but of providing a beginning point for subsequent discussions concerning this particular application of group discussion.

The model

First, let us look at the possible influence of talk on individual critical thinking skills. I mentioned above that talk allows students to observe manifestations of others' thought processes (i.e. critical thinking). This idea of speech as the expression of thought is not new. Whatmough (1956) stated that "language is neither part of nor controller of thought; it is, rather, a vehicle, a tool, an instrument of thought" (Eisenson et. al., 1963, p. 123) and

Lucas in 1946 felt that "All students are agreed that language is the expression of human thought" (Eisenson et. al., 1963, p. 123). Hurt, Scott and McCroskey (1978) talk about concepts (thoughts) in terms of communication: "The things, of course, which we are trying to make common when we communicate are the concepts we have attained" (p. 69). So, the first benefit of group discussion is the idea that we can observe a representation of others' thought processes in their communication. This allows the student who learns best by observation to do so in an indirect manner.

Another advantage of talk is that quite often talk allows us (sometimes, forces us) to crystallize our ideas and thoughts. I use crystallize not in the sense of harden but in the sense of taking a recognizable form and becoming clear. Because we are attempting to communicate our ideas to others, those ideas have to be in a form which is coherent and understandable to others. This process is labelled self-clarification by Adler, Rosenfeld and Towne (1986). They state that "Sometimes you can clarify your beliefs, opinions, thoughts, attitudes, and feelings by talking about them with another person" (p. 186). Walter and Scott (1984) also discuss the link between learning and talk: "We must learn lessons and find answers ourselves; we must appropriate them to make them ours. We may listen; we may read; we may experience in a hundred different ways multitudes of forces that communicate meaning to us. But do

we *know* unless we ourselves express the ideas that we find moving within us as a result of our varied experiences? When we say that we must express for ourselves the lessons we learn from books and from experiences, we are saying more than simply that we must recite. We must commit ourselves to ideas - to understanding, to analyzing, to solving - and stand responsible for recommending those ideas as good information or opinions to others" (p. 10-11). So, not only does communication help us to crystallize our thoughts, but, if students learn from observing others' during the process, then such communication can help to express that learning, thus making it more effective.

It would seem that the interaction encouraged in group discussion has two beneficial effects for the individual student: it allows them to learn by observation and it allows them to crystallize their own thoughts and learning. If we accept these ideas, then we need to ponder how such learning might, in itself, affect the group process. If such learning is positive (and I will return to this point later), then it follows that the communication in the group will evidence higher quality critical thinking because it now consists of slightly higher quality critical thinkers. This in turn creates a higher quality group critical thinking process. And, since this group critical thinking process is the learning environment, we, therefore, have an enriched learning environment which should stimulate more

learning of critical thinking. Thus, we can, theoretically and ideally, create a continuous, positive feedback loop with the group process and individual critical thinking interacting and influencing each other through communication. In this model, communication is both a mediating and a moderating variable. It is the channel for the observation of others' thought processes. But communication also *moderates* the process of learning within the individual: expression helps enhance learning.

Building on the model

Admittedly, this model is both simplistic and idealistic. It leaves the task of adding complexity and reality to future research. Such research needs to concentrate on discovering those variables (individual and group) most likely to have a positive effect on the interaction between an individual's learning of critical thinking skills and the group critical thinking process. This task seems to call for an interaction between the disciplines of education and communication. Education researchers might be looking for the kinds of individual variables (e.g. prior instruction) which might enhance the group discussion, thus working on the individual affecting the group process part of the interaction. Communication researchers, meanwhile, need to discover those variables which have an effect on the group critical thinking process,

working on enhancing the learning environment part of the interaction.

Such group research has begun with an investigation into how various agendi affect the group critical thinking process. This study compared the effects of the cooperative and devil's advocacy (which introduces conflict to the process) agendi on the group critical thinking process. Dixson and Miller (1991) found that the cooperative agenda yielded significantly higher quality group critical thinking processes than the devil's advocacy agenda.

Agenda is one of the more obvious factors which could be expected to effect the critical thinking process of the group. Some others which deserve investigation include group size, history and the nature of the task itself. I hope that this marks the beginning of more extensive interaction between education researchers and communication researchers on this topic. We could all learn much from such a dialogue!

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